What is claimed is:

1. An inverter control device for driving a motor, including a rectifying circuit for converting an AC power from an AC power source into a DC power, and an inverter for converting the DC power from the rectifying circuit into an AC power of desired frequency and desired voltage to supply the AC power to a motor, the rectifying circuit including a diode bridge, and a reactor with a predetermined small capacity which is connected to the AC input end or DC output end of the diode bridge, the inverter control device having a capacitor with a predetermined small capacity for absorbing the regenerative energy of the motor between DC buses of the inverter, the inverter control device comprising:

a motor voltage command generator that generates a voltage command of each phase of the motor on the basis of a speed command of the motor given from outside;

a PN voltage detector that detects a DC voltage of the inverter;

a reference DC voltage calculator that determines a reference DC voltage of the inverter;

a PN voltage corrector that obtains PN voltage correction coefficient by dividing the reference DC voltage by the detected DC voltage; and

a motor voltage command corrector that corrects the voltage command of each phase by multiplying the voltage command of each phase obtained by the motor voltage command generator with the PN voltage correction coefficient which is output from the PN voltage corrector,

wherein the PN voltage corrector has a first mode which is used when the DC voltage value is more than the reference DC voltage and in which the PN voltage correction coefficient is set to 1, and a second mode in which the value obtained by dividing the reference DC voltage by the detected DC voltage is directly set to the PN voltage correction coefficient.

2. The inverter control device according to claim 1, wherein the reference DC voltage determined by the reference DC voltage calculator is variable depending on the speed command of the motor given from outside.

3. The inverter control device according to claim 1, wherein an inverter operating frequency is set so as to prevent the inverter operating frequency from stationary fixing in a frequency range having a predetermined margin around the resonant frequency which is a frequency of an even number multiple of AC power source frequency.

4. The inverter control device according to claim 1, wherein combination of the small capacity reactor and the small capacity capacitor is determined so that the resonant frequency of the small capacity reactor and the small capacity capacitor is larger than 40 times of the AC power source frequency.

5. The inverter control device according to claim 1, wherein the capacity of the small capacity capacitor is determined so that the maximum value of the DC voltage elevating when the inverter is stopped is smaller than

withstand voltages of electric devices included in peripheral circuits of the inverter.

6. The inverter control device according to claim 1, wherein the carrier frequency of the inverter is determined so that a power factor value of the AC power source is a predetermined value.

7. An air conditioner comprising:

a compressor for compressing a refrigerant;

a motor for driving the compressor; and

an inverter control device according to claim 1 for converting the DC power from the rectifying circuit into an AC power of variable voltage and variable frequency for supplying the AC power to the motor.

8. The inverter control device according to claim 2, wherein an inverter operating frequency is set so as to prevent the inverter operating frequency from stationary fixing in a frequency range having a predetermined margin around the resonant frequency which is a frequency of an even number multiple of AC power source frequency.

9. The inverter control device according to claim 2, wherein combination of the small capacity reactor and the small capacity capacitor is determined so that the resonant frequency of the small capacity reactor and the small capacity capacitor is larger than 40 times of the AC power source frequency.

10. The inverter control device according to claim 2, wherein the capacity of the small capacity capacitor is determined so that the maximum value of the DC voltage elevating when the inverter is stopped is smaller than withstand voltages of electric devices included in peripheral circuits of the inverter.

11. The inverter control device according to claim 2, wherein the carrier frequency of the inverter is determined so that a power factor value of the AC power source is a predetermined value.

12. An air conditioner comprising:

a compressor for compressing a refrigerant;

a motor for driving the compressor; and

an inverter control device according to claim 2 for converting the DC power from the rectifying circuit into an AC power of variable voltage and variable frequency for supplying the AC power to the motor.